

PowerOne

Use Case Review

By

Tony Foster

VIRTUAL DESKTOPS (VDI)

Data Center Trends

In the 1960s, the average tenure for a company to remain listed in the S&P 500 was 55 years. Current projections indicate that 75 percent of the current S&P 500 member companies will be replaced in the next three decades. That dramatic turnover is due to many factors, including globalization and demographics. Superior management of data and shrewd investments in information technology (IT) are common traits of organizations experiencing rapid growth share compared to those that are in decline. Data is essential to enterprises in the digital era and IT moves the data to where it can best support organizational growth.

For decades, many organizations benefited from the improved capabilities and lower prices predicted by Moore's Law. However, as the growth rate of raw silicon power begins to level off, the ability to do more with less will depend on systems integration and automation. While the cost of equivalent technology has declined year over year for decades, operating costs—in particular the cost of labor—have increased steadily. The need to integrate and automate is clear.

Ten years ago, it was projected that all data center operations would be managed by a few vendors hosting cloud-based services by contract. The assumption was that efficiencies of scale would drive automation and that the cost advantages of standardization would eliminate the motivation to own and operate private data centers. In fact, in the past ten years have seen growth in public/contract clouds as well as in on-premises private clouds and traditional IT models. We now realize that private data centers are here for the long run, and that large investments in ongoing modernization and expansion are fueling demand for systems that have better integration and more automation out-of-the-box.



PowerOne Advantages

A key initiative of digital transformation is the optimization of the datacenter infrastructure layer. The PowerOne System is a new Dell EMC converged infrastructure (CI) offering that is:

- **Delivered as a turnkey system that provides fully automated VMware business outcomes**
- **Based on top-performing Dell EMC components: PowerMax storage, PowerEdge MX7000 servers, and PowerSwitch networking**
- **Designed and built to address the customer's ongoing investment in data center automation**
- **Aimed to accommodate the increasing technology consumption required for achieving digital transformation objectives**
- **Designed to be massively scalable to support thousands of servers and multi-petabytes of storage**

PowerOne Systems are engineered and assembled by a single vendor, providing a seamless customer experience that is fully supported by Dell EMC.

best practices, it can easily fit in with the customer's migration to the hybrid cloud and become a supporting element of a Dell Technologies Cloud (DTC) implementation. Using PowerOne Controller, deploying and managing VMware based workload domains has never been easier.

To respond to the ever-present market demand for cost optimization, the PowerOne System is built around asymmetrical scaling principles. Asymmetrical scaling allows for infrastructure growth just in the required layer (compute, memory, or storage), independently of the others. PowerOne offers the best alternative for business workload scenarios where there is a heavy demand just for storage or just for compute, avoiding the huge infrastructure costs associated with classic homogenous scaling. The resulting infrastructure is less complex and provides significant software and licensing savings by allowing infrastructure resources to scale only as required.

PowerOne management is based on its RESTful API and the API's front-end UI, PowerOne Navigator. PowerOne Navigator provides simple wizard-based operations that enable the customer to initialize, configure, provision, manage, and expand their infrastructure.

PowerOne Navigator also lets you automate the life-cycle management of your IT infrastructure to simplify data center operations, reduce infrastructure cost of ownership, and deliver a semi-autonomous management and operating experience.

PowerOne Controller is a key component of the PowerOne System, providing increased levels of performance by automating:

- **Allocation of SAN Fabric and storage**
- **Allocation of compute resources through a dynamic, zero-midplane server infrastructure**
- **Administration of network resources by using near-zero-touch PowerFabric administration**

Through the effective use of automation, PowerOne Controller defines new operational paradigms in:

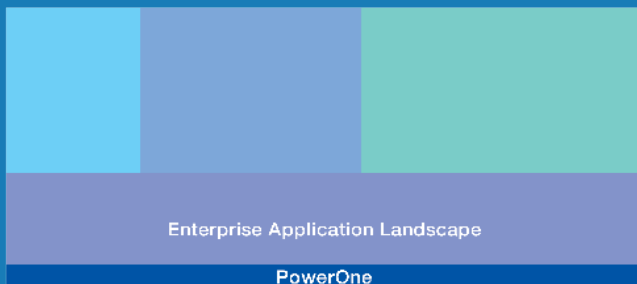
- **Infrastructure initialization, configuration, and provisioning**
- **Operational analytics and monitoring**
- **Inventory management**

PowerOne Controller reduces the time required to develop and deploy products, thereby reducing the infrastructure's time-to-value. Because the PowerOne System is designed according to VMware Validated Design (VVD)

Component	Requires Attention	Out of Service	Total
PowerOne Controller	0	0	2
Cabinets	0	0	2
Management Switches	0	0	2
System Fabric Switches	0	0	2
Fabric Switching Engines	0	0	2
Fabric Expander Modules	0	0	2
Compute Chassis	1	0	4
Servers	2	1	31
Storage Switches	0	0	4
Storage Arrays	0	0	4
Terminal Servers	0	0	1
IPI Appliances	0	0	2

PowerOne Navigator showing PowerOne components and status

PowerOne’s asymmetrical scaling capabilities make it the perfect choice for consolidating data center workloads and for hosting the most resource-demanding business-critical workloads. PowerOne’s PowerMax storage arrays, MX7000 servers, and PowerSwitch networking are ideally suited for hosting virtualized or bare-metal SAP, SAP HANA, or Oracle deployments, and for building high-performance SQL or Exchange clusters. PowerOne is designed to satisfy the demands of memory-intensive, low-latency, and high-bandwidth workloads.



Varying Resource Requirements

- Performance & Experience
- Size & Scale
- Location & Endpoint
- Security & Availability

Cohabitation of Enterprise services and end user experiences:

- Wire Speed Performance
- Enterprise HA and Security

Single System platform

PowerOne Use Cases Being Driven by Digital Transformation

Use Case – PowerOne and VDI

Enterprises implementing a digital transformation need IT infrastructure that is designed to support their endeavor. As well as modernizing applications and the underlying infrastructure, it is important to focus on modernizing end-user workspaces and reducing support complexity. End-users in the digital age want dependable and responsive digital workspaces.

PowerOne System and VDI

Many enterprises implementing a workspace transformation rely on virtual desktop infrastructure (VDI) to give their employees a superior desktop experience. VDI provides IT with the agility, security, and centralized management that are critical to providing a great end-user experience while reducing operational complexity.

Performance is one of the key metrics that are tracked for a successful VDI deployment. It can be challenging for IT teams to develop accurate capacity planning for their environments using only benchmarking test results. PowerOne allows VDI environments to be easily installed and scaled to meet both planned growth and unexpected user demands. As more virtual desktops are needed, the automation functionality of the PowerOne Controller can assist in delivering additional resources (compute, storage, and networking) to new or existing cluster resource groups (CRGs) that host virtual desktops. User experiences and expectations are more easily maintained when IT can reduce the time required to create and scale virtual desktop environments.

PowerOne makes it easy to both create new VDI clusters and expand existing clusters. The asymmetrical scaling of storage and compute that PowerOne enables is a powerful advantage for VDI environments. This goes beyond being able to scale the core physical aspects of the environment, such as CPU, RAM, and bandwidth. PowerOne lets you scale each cluster asymmetrically according to the needs of the end-user environment.

For example, in Cluster A the optimal amount of storage might be 1 TB volumes, while in Cluster B the optimal size might be 1.5 TB volumes because of the associated image sizes. PowerOne makes it easy to optimize clusters independently at scale to improve usage of infrastructure.

PowerOne is ideal for large dedicated VDI implementations but can also run VDI workloads in combination with high-value workloads such as SAP, Oracle, Microsoft SQL, and Epic on a common platform. When data is local to both VDI and application workloads, users experience quick and secure access between their virtual desktops and the business applications over a unified high-speed data network.

The widespread adoption of the Windows 10 OS is giving organizations an opportunity to evaluate an infrastructure upgrade to support a better user experience on the new OS. This is an optimal time to deploy VDI on PowerOne. Virtual desktops can improve performance with high-speed NVMe storage, which is ideal for VMware Horizon Instant Clones. In addition, PowerOne delivers outstanding compute density for virtual desktops by using the highly dense MX7000 and MX compute sleds.

Digital transformation is heavily dependent on application modernization, putting new pressures on both developers and IT to deliver solutions in a shorter time. As the number of developers grows, IT is switching to VDI for deploying desktops for application developers. Often, these are Linux-based desktops that are configured with specialty applications such as a proprietary suite of developer tools. Workstations that host the Docker runtime and even Kubernetes (K8s) for container management are becoming increasingly popular in developer VDI deployments. A VMware Horizon environment running on PowerOne is an excellent choice for virtualizing powerful Linux desktops running in a dedicated cluster that can be scaled independently of other virtual desktop pools in separate CRGs.

The independent scaling of CRGs means that the developer's VDI environment can keep pace with the rapid development cycles of project startups and closeouts. Also, other traditional users can be segmented on resources separate from the developers so that neither impacts the other, improving the user experience of all VDI users.



Conclusions

The PowerOne System is optimized for outcomes, making it well suited for the constantly evolving demands of virtual desktop users. The widespread adoption of the Windows 10 OS and the new demands of software developers working to modernize application portfolios create an opportunity to address both types of user needs with a VDI solution based on PowerOne. The ease and flexibility of resource configuration, management, and expansion that are available with the PowerOne system gives IT the option to provide either dedicated resources for VDI or the ability to host a combination of business applications, developer workstations, and traditional VDI on a common platform.